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SERIAL NUMBER	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
08/160,909	12/03/93	YAMAZAKI	S 0756935

EXAMINER	
WILLIAMS, H	
ART UNIT	**PAPER NUMBER**
2811	7

D1M1/0406
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DATE MAILED: 04/06/95

This is a communication from the examiner in charge of your application.
COMMISSIONER OF PATENTS AND TRADEMARKS

☑ This application has been examined ☑ Responsive to communication filed on 1/31/95 ☐ This action is made final.

A shortened statutory period for response to this action is set to expire 3 month(s), _____ days from the date of this letter.
Failure to respond within the period for response will cause the application to become abandoned. 35 U.S.C. 133

Part I THE FOLLOWING ATTACHMENT(S) ARE PART OF THIS ACTION:

1. ☑ Notice of References Cited by Examiner, PTO-892.
2. ☐ Notice of Draftsman's Patent Drawing Review, PTO-948.
3. ☐ Notice of Art Cited by Applicant, PTO-1449.
4. ☐ Notice of Informal Patent Application, PTO-152.
5. ☐ Information on How to Effect Drawing Changes, PTO-1474.
6. ☐ _____.

Part II SUMMARY OF ACTION

1. ☑ Claims 8-20 are pending in the application.

   Of the above, claims _____ are withdrawn from consideration.

2. ☑ Claims 1-7 have been cancelled.

3. ☐ Claims _____ are allowed.

4. ☑ Claims 8-20 are rejected.

5. ☐ Claims _____ are objected to.

6. ☐ Claims _____ are subject to restriction or election requirement.

7. ☐ This application has been filed with informal drawings under 37 C.F.R. 1.85 which are acceptable for examination purposes.

8. ☐ Formal drawings are required in response to this Office action.

9. ☐ The corrected or substitute drawings have been received on _____. Under 37 C.F.R. 1.84 these drawings are ☐ acceptable; ☐ not acceptable (see explanation or Notice of Draftsman's Patent Drawing Review, PTO-948).

10. ☐ The proposed additional or substitute sheet(s) of drawings, filed on _____. has (have) been ☐ approved by the examiner; ☐ disapproved by the examiner (see explanation).

11. ☐ The proposed drawing correction, filed _____, has been ☐ approved; ☐ disapproved (see explanation).

12. ☑ Acknowledgement is made of the claim for priority under 35 U.S.C. 119. The certified copy has ☑ been received ☐ not been received ☐ been filed in parent application, serial no. _____ ; filed on 2/18/94.

13. ☐ Since this application apppears to be in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under Ex parte Quayle, 1935 C.D. 11; 453 O.G. 213.

14. ☐ Other

EXAMINER'S ACTION

PTOL-326 (Rev. 2/93)

Applicant's election without traverse of the invention of Group II, claims 8-20 in Paper No. 6 is acknowledged.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless --
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

Claims 8-11 and 13 are rejected under 35 U.S.C. § 102(a) and 102(e) as being clearly anticipated by Miyachi et al.

Miyachi et al. disclose an apparatus which comprises a film forming chamber 1 for forming an amorphous semiconductor film and a dehalogenating-hydrogenating chamber 2, see figure 5, for example. The two chambers are combined by a conveying device 13. The substrates 10 move between the two chambers without being exposed to outside air. Note in Example 14 that the dehalogenation-hydrogenation is preferably performed by light irradiation using, for example, an ultraviolet laser, a visible light laser or a carbon dioxide laser, see column 18, lines 29-43.

The following is a quotation of 35 U.S.C. § 103 which forms the basis for all obviousness rejections set forth in this Office action:

> A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.
>
> Subject matter developed by another person, which qualifies as prior art only under subsection (f) or (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person.

Claim 12 is rejected under 35 U.S.C. § 103 as being unpatentable over Miyachi et al. as applied to claim 8 above, and further in view of Yamazaki et al., U.S. Patent 4,888,305.

Miyachi et al. is applied as supra. Miyachi lacks anticipation only of introducing the laser light through a window provided in the wall of the chamber. Yamazaki et al. disclose an apparatus for photo annealing non-single crystalline silicon films in which light irradiation is carried out by irradiating the interior of a reaction chamber with an excimer laser through a window, see figure 1 and column 2, lines 38-41. Therefore, it would have been obvious to the skilled artisan that the laser light used in the known method of Miyachi could be introduced

through a window provided in the wall of the dehalogenating-hydrogenating chamber thereby allowing control of the laser without exposing the substrate to outside air.

The following is a quotation of 35 U.S.C. § 103 which forms the basis for all obviousness rejections set forth in this Office action:

> A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.
>
> Subject matter developed by another person, which qualifies as prior art only under subsection (f) or (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person.

Claims 8 and 14-20 are rejected under 35 U.S.C. § 103 as being unpatentable over Begin et al. in view of Miyachi et al., Nakayama et al., and Kawasaki et al. further in view of Codama.

Begin et al. disclose an apparatus for processing semiconductor wafers which includes satellite reaction chambers 60, 62, 64 and 66 disposed around the periphery of central chamber 14, see figure 1. A robot assembly 16 comprising arms 18, 20, and 22 is disposed in central chamber 14. Assembly 16 moves the substrate 12 to any position within the apparatus.

Begin lacks anticipation only of disclosing that reaction chambers 60, 62, 64 and 66 comprise a light processing chamber, an etching chamber and a plasma doping chamber. However, apparatuses used for irradiating an amorphous silicon layer for dehalogenating and hydrogenating the layer, etching, and plasma doping are well known in the art, see Miyachi et al., Kawasaki et al., and Nakayama et al., respectively. Codama discloses a method of fabricating a thin film transistor which includes the steps of depositing an amorphous silicon layer, etching the silicon layer, the gate layer, and the gate insulating layer, plasma doping the silicon layer to form source and drain regions, see column 1, lines 42-46, and hydrogenating the layer. Therefore, in light of the semiconductor device process disclosed by Codama, it would have been obvious to the skilled artisan to include a light irradiation chamber, an etching chamber, and an ion introducing chamber in the known apparatus of Begin et al.

Claim 20 is rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

It is unclear in claim 20, line 1, what a "magic hand" is.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The additionally cited references disclose various multi-chambered apparatuses for processing semiconductor devices.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to M. Wilczewski whose telephone number is (703) 308-2771.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0661.

MARY WILCZEWSKI
PRIMARY EXAMINER
GROUP 1100

M.Wilczewski:mm
April 05, 1995